Fukushima Media Involvement: Lessons Learned and Challenges – 13261

Geoffrey L. Harvey*, Wayne L. Johnson* and Greg L. Koller* *Department of Energy Pacific Northwest National Laboratory

ABSTRACT

Only days after the Fukushima nuclear reactor disaster on March 11, 2011, the DOE's Pacific Northwest National Laboratory, or PNNL, found itself in a maelstrom of media attention following its announcement of the detection of minute levels of radioactive material originating from the damaged reactors 4,500 miles away. Because PNNL develops state-of-the-art ultra-sensitive radionuclide detection and monitoring systems for national security applications, and has some of the equipment operating on its Richland campus, there was little surprise when one of these sophisticated systems led PNNL to be the first to detect measurable radionuclides in the United States. On Wednesday, March 16, 2011, that system detected miniscule levels of short-lived radioactive xenon, a telltale element derived from either weapons testing or a major reactor disruption. Immediately after the detection was announced, a flurry of inquiries nearly overwhelmed staff as governments, scientific organizations, the general public, and reporters struggled to understand and estimate what impacts this disaster might have on health and environment.

Over the course of about three weeks, PNNL's News & Media Relations staff and its scientists and engineers responded to more than 100 requests for information, and engaged in dozens of personal interviews with international, national, regional, and local media. While many of the interviews and resulting stories were accurate and well done, not all communication went flawlessly. In the midst of chaos and confusion, which are part of any significant crisis, hiccoughs are sure to occur. Addressed here is "the rest of the story."

INTRODUCTION

In the aftermath of the nuclear reactor disaster at Fukushima on March 11, 2011 (Figure 1), PNNL quickly realized that it would be a lightning rod for media attention after publicly announcing that it had detected the radioactive isotope Xe-133 at its Richland, Washington laboratory on Wednesday, March 16. Researchers confirmed that the origin of the element was consistent with a release from the reactors in northern Japan a few days earlier. These minute levels of xenon were the first to be detected in the US.



Figure 1. Aerial photos taken days after explosion of the Daiichi nuclear power stations in Okumamachi, Fukushima prefecture in northern Japan.

The media attention was not surprising, however. For decades, the laboratory has been on the forefront of developing radiation detection technologies for organizations like the National Nuclear Security Administration. This has included developing methods and instruments deployed worldwide for detecting ultra-trace levels of radioactive materials to support non-proliferation and treaty verification activities. The lab developed the radiation monitoring systems used by the Comprehensive Test Ban Treaty Organization at 30 stations worldwide to detect evidence of illicit nuclear bomb testing. In addition to providing important, real-time data from the Fukushima reactor releases, further analysis of monitoring data will allow scientists to determine just how sensitive the international monitoring network is to covert bomb tests.

The levels detected by PNNL were extremely low and posed no health hazard. Dose rates were less than one-millionth of the amount a person normally receives in one day from background radiation produced by sources like the sun [1].

In the early aftermath of the catastrophe, the desire for information quickly rose as publics, governments, and reporters struggled to understand and estimate what impacts this disaster might have on health and environment. Over the course of about three weeks, PNNL Media Relations staff and scientists and engineers engaged in more than 100 media inquiries and conducted about 40 interviews with both national and international media. PNNL specialists were called upon to address a variety of topics from radiation detection, fate and transport of radionuclides, and environmental remediation, to inspection and characterization of spent fuels, stabilization and decontamination of reactor sites, and options for remediation and control of contaminated soils, biota, and water in surrounding regions. These discussions involved interviews with magazines such as Nature, Science, Scientific American; newspapers including the New York Times, Seattle Times, Portland Oregonian; broadcast media including

National Public Radio and the BBC; as well as many other news gatherers and organizations.

In addition, PNNL staff fielded inquiries from DOE and various national security clients, other government agencies like the EPA, Washington Department of Health, and regional stakeholders such as Energy Northwest's Columbia Generating Station and representatives from DOE's Hanford Site.

MANAGING THE MESSAGE

Before engaging with media on this sensitive, international event, coordinating communications with the public affairs office at DOE Headquarters (HQ) and the Nuclear Regulatory Commission (NRC) was essential. Knowing that PNNL and other national laboratories would eventually be approached for details and comment, close coordination and adherence to established guidelines was needed. In the end, both DOE and NRC gave PNNL the latitude to respond directly to media calls with a few provisions: 1) only talk based on first-hand knowledge or that which you have personally experienced, 2) avoid addressing hypothetical scenarios or policy issues, and 3) avoid speculating on how events at Fukushima might evolve and how this accident might affect the future of the nuclear industry.

Radio – Follow established guidelines as promised

An early miss-step occurred when a local radio station interviewed two PNNL scientists about issues related to the damaged Daiichi reactors only days after the accident. The discussion went quite well; lab scientists responded properly to probing questions and "almost" stayed within the established guidelines.

Unfortunately, one misstatement was made during the live program about how the conditions at the reactor sites in Japan appeared to be improving and perhaps stabilizing. National news reports were claiming that to be true. However, the agreement with DOE-HQ was for scientists to only speak about things they had personally experienced or knew to be factual. Because they had no first-hand knowledge and were only assuming news reporters were accurate, they should not have commented on conditions in Japan. As it turned out, the news director used a quote from one of the two PNNL scientists in a newscast the *following* morning saying things seemed to be "stabilizing." By then, however, things had changed dramatically in Japan where conditions were reportedly growing much worse; so the local story was completely incongruent with what was being reported in Japan. The resulting news of the faux pas made its way to DOE-HQ post haste, and was not warmly welcomed. Promises to do better were made and accepted, and the permission to respond to future media inquiries was mercifully extended.

Newspaper – Release of accurate information is essential

In the weeks that followed the disaster, atmospheric radioactive plumes travelling westward and beyond sparked strong public and media interest. Even here in Arizona, the state EPA website [3] provided responses to questions from nervous residents fearing the contamination. Regulators found it necessary to tell citizens they should NOT take potassium iodide tablets to ward off the ill effects of radio iodine (Figure 2). The desire for current, accurate information regarding possible health effects was strong and growing.

 AQ for Arizona regarding the Fukushima Reactors – March 24, 2011 AQ for Arizona regarding the Fukushima Reactors – March 24, 2011 Arizona Partini a Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the value and in Phoenix. The amount of radiation detected is very low concentrations and do not pose a public health only when people are exposed to high levels of radiation. Federal, state, and local agencies are continuing to monitor the situation. Federal, state, and local agencies are continuing to monitor the situation. For up to date information, please refer to annu assin got: Anti being done to assess Arizona's risk from the events in Japan and in the US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in the US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizons? A. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. De amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The valiation comes from the sun, from materials form evestructure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. 	RADI	ATION RECULATORY AGENCY
 The amounts of ndioactive material associated with releases from the Fukushima Daitchi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and a Phoenix. The amount of radiation detected is very low concentrations and do not pose a public health to Arizonans. It is not necessary to have potassium iodide (KI) on hand. The WHO and FDA recommend I only when people are exposed to high levels of radiation. Federal, state, and local agencies are continuing to monitor the situation. For up to date information, please refer to <u>norm assinger</u>. Anton Marking and the assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in the US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation level Arizona. Q. What is being done to assess Arizona's risk from the events in Japan and in the US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation level Arizona. Q. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Daitchi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Sackground radiation is radiation that is always around us. We are exposed to natura radiation on a daily basis. The radiation comes from the sun, from material for experiment on a daily basis. The radiation from corteebrones and computer, and from experiment on the sun and the local geo and elevation. People can also	FAQ fo	r Arizona regarding the Fukushima Reactors – March 24, 2011
 Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations and do not pose a public health to Arizonans. It is not necessary to have potassium iodide (KI) on hand. The WHO and FDA recommend I only when people are exposed to high levels of radiation. Federal, state, and local agencies are continuing to monitor the situation. For up to date information, please refer to <u>none assin got</u>. Radiation Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in 1 US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizona? M. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radiation located west of the valley and in Phoenix. The amount of radiation located west of the valley and in Phoenix. The amount of radiation located west of the valley and in Phoenix. The amount of radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation from crediation, also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such ary maximum. 	Key Poi	ints
 The amount of radiation detected is very low concentrations and do not pose a public health to Arizonans. It is not necessary to have potassium iodide (KI) on hand. The WHO and FDA recommend I only when people are exposed to high levels of radiation. Federal, state, and local agencies are continuing to monitor the situation. For up to date information, please refer to <u>annu assin por</u>. Radiation Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in 1 US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizona? A. There amounts of radioactive material associated with releases from the Fukuchima Datichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phomix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from materials form we structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or any maximum. 	P	ower Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using
only when people are expôsed to high levels of radiation. Federal, state, and local agencies are contiming to monitor the situation. For up to date information, please refer to more assinger: Cadiation Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in to U.S. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Datichi Power Plant in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Datichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation	• T	he amount of radiation detected is very low concentrations and do not pose a public health threa
 For up to date information, please refer to <u>unun assin post</u>. Radiation Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in 1. U.S. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Daitchi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located vest of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from materials form eves structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or any machines. 		
 Radiation Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in to US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation level Arizona. Q. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Daichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from materials goung and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines. 		
 Q. What is being done to assess Arizona's risk from the events in Japan? A. The Nuclear Regulatory Commission (NRC) is monitoring the events in Japan and in 1 US. The Arizona Radiation Regulatory Agency (ARRA) is monitoring the radiation levels Arizona. Q. Will the radiation in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Datichi Power Plant in Japan affect people in Arizona? A. Trace amounts of radioactive material associated with releases from the Fukushima Datichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from natural materials four he ground, water and ari, from our relevisions, cell phones and computer, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines. 	• F	or up to date information, please refer to <u>www.azein.gov</u>
 A. Trace amounts of radioactive material associated with releases from the Fukushima Daiichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonaus. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from matural materials fount the ground, water and ari, from our relevisions, cell phones and computers, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines. 	Arizoi	ia.
Datichi Power Plant in Japan have been detected by the Arizona Radiation Regulatory Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natura radiation on a daily basis. The radiation comes from the sun, from natural materials foun the ground, water and air, from our televisions, cell phones and computer, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines.	-	
Agency using instrumentation located west of the valley and in Phoenix. The amount of radiation detected is very low concentrations (below normal background radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natura radiation on a daily basis. The radiation comes from the sun, from natural materials foun- the ground, water and air, from our relevisions, cell phones and computer, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines.		
radiation) and does not pose a public health threat to Arizonans. Q. What is meant by background radiation? A. Background radiation is radiation that is always around us. We are exposed to natural radiation on a daily basis. The radiation comes from the sun, from natural materials foun the ground, water and atr, from our relevisions, cell phones and computer, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such o ray machines.		
A. Background radiation is radiation that is always around us. We are exposed to natura radiation on a daily basis. The radiation comes from the sun, from natural materials foun the ground, water and air, from our televisions, cell phones and computers, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such or ray machines.		
radiation on a daily basis. The radiation comes from the sun, from natural materials four the ground, water and air, from our televisions, cell phones and computers, and from eve structure around us. Levels of exposure to natural radiation also depend on the local geo and elevation. People can also be exposed to radiation from chemotherapy or medical equipment such o ray machines.	Q. W	hat is meant by background radiation?
ray machines.	radiat the gr structi	ion on a daily basis. The radiation comes from the sun, from natural materials found in ound, water and air, from our televisions, cell phones and computers, and from every ne around us. Levels of ersoure to natural radiation also depend on the local geology
		5-1-1-1
farch 24, 2011 11:30 a.m. Page 1 of 4	farch 24, 20	11 11:30 a.m. Page 1 of 4

Figure 2. Arizona regulators felt compelled to specifically inform concerned residents not to take potassium iodide tablets, because exposures to radio iodine were so low.

As the hunger for timely information increased, PNNL staff were faced with another media challenge involving a major regional newspaper. A reporter preparing an article insisted on being given access to data recorded by PNNL's sophisticated monitoring technology, demanding that details of all the xenon data be revealed immediately. The reporter stated that because PNNL was a federal government entity it was required to share the information. However, the data had not yet been peer-reviewed for errors and inaccuracies, a common practice prior to releasing data. In the back of everyone's mind was Pons and Fleishmann's (1989) announcement of "cold fusion" and the embarrassment and disgrace the release of un-vetted data can cause.

The reporter's request did not appear to have anything to do with the data being "health related" because numerous published articles had already confirmed the radioactive materials were less than one-millionth of the amount a person normally receives in one day from background radiation produced by sources like the sun, and that these levels were continuing to diminish daily [1]. For example, USA Today [4] reported that, "Minuscule amounts of radiation from Japan's stricken nuclear plant have reached the west coast but federal and state officials say it poses no health risk." Another story published by Scientific American [5] quoted PNNL nuclear expert Ted Bowyer as saying that "the tiny concentrations of radioactive iodine, cesium, tellurium, xenon and lanthanum (were) far below normal background levels and not a health risk."

Providing inaccurate, un-vetted information to the media could have inadvertently prompted the public to take inappropriate or ill-advised actions—perhaps encouraging Arizona residents to consume potassium iodide tablets, for instance. Nonetheless, the reporter exhibited displeasure with PNNL's refusal to make un-vetted data available by calling us out in an article (Figure 4). The reporter even commented via email, "Imagine the headline: Federal scientists refuse to reveal results of Japan radiation monitoring."

"You'd be hard pressed to know the details if you relied on government agencies for your information."

"Scientists from the Department of Energy's (DOE) Pacific Northwest National Laboratory (PNNL) in Richland shared some of the initial data from ultrasensitive instruments designed to detect fallout from nuclear tests, but have since declined to make other results public."

Figure 4. Newspaper article excerpt indicating how some reporters may consider scientific peer review an unnecessary step or perhaps even a suspicious practice intended to delay or avoid releasing scientific data.

Because many sources had confirmed that the miniscule levels of radiation exposure were not a risk, the refusal to turn over the data immediately was neither a matter of denying the public access nor depriving citizens of essential health-related information. Rather, it was ensuring that only accurate data were shared. Furthermore, it isn't the responsibility of a federal laboratory like PNNL to collect and make these data available for public health protection. Other federal and state agencies hold that responsibility.

A full review of the data revealed minor errors that were corrected before the data were shared publicly. This experience helped staff recognize that the need for peer review can be a foreign concept to reporters in the popular media who expect information immediately and view any hesitancy with suspicion or worse.

GIVING CREDIT AND COMMITTING TO FUTURE INVOLVEMENT

That is not to say that many encounters with the media were negative. In fact, several staff members received media coverage for their endless support; e.g., travelling to Japan on many occasions to assist in establishing dose assessments; sharing creative ways to clean up contaminated land and water; dealing with failed nuclear systems and fuel; and sharing their hands-on expertise from past dealings with disasters at Chernobyl and Three Mile Island (Figure 5). Some of these experts received special recognition. [6]



Figure 5. PNNL scientist Yasuo Onishi was featured in a Seattle television news story for his strong, unwavering commitment to cleanup and restorative efforts in Japan.

PNNL's News and Media Relations group and its fellow communications team members proudly promote and recognize the dedicated efforts of its many staff members devoted to helping the Japanese government and its people recoup and recover after the Fukushima disaster. Whether providing coverage through internal newsletters and staff communications or promoting significant awards of recognition from DOE-HQ to media, staff strive to share the meritorious efforts with interested audiences (Figure 6).



Figure 6. DOE Secretary Steven Chu recognized PNNL scientist Yasuo Onishi for his contributions in working with the Japanese government in the cleanup effort.

The lab looks forward to future media involvement to chronicle many activities and successes to come. Recently, PNNL and Savannah River National Laboratory signed a contract to continue to provide technical support as the Japanese move forward on their long road to recovery. The lab anticipates continued media involvement and interest as progress milestones are achieved and anniversaries are recognized each March 11. PNNL, as well as all of DOE's contributing laboratories, will continue to participate and support Japan on its long journey back.

REFERENCES

- Pacific Northwest National Laboratory (PNNL). 2011. Nuclear Radiation Detection Technologies at PNNL. Accessed November 2012 at <u>http://www.pnnl.gov/research/detection.stm</u>.
- [2] Rojas-Burk, J. April 2, 2011. "Tracking radiation from Japan to the Pacific Northwest: Scientific insights." *The Oregonian*. See <u>http://www.oregonlive.com/health/index.ssf/2011/04/tracking_radiation_from_jap an.html.</u>
- [3] Arizona Radiation Regulatory Agency. March 24, 2011. FAQ for Arizona regarding the Fukushima Reactors (PDF). See <u>https://www.google.com/#hl=en&sclient=psy-ab&q=%22FAQ+for+Arizona+regarding+the+Fukushima+Reactors%22&oq=%22FAQ+for+Arizona+regarding+the+Fukushima+Reactors%22&gs_l=serp.12...0. 0.2.617.0.0.0.0.0.0.0.0.0.les%3B..0.0...1c.GtPDKjLGl20&pbx=1&bav=on.2,or.</u>

<u>r_gc.r_pw.r_qf.&fp=6476710f1547d125&bpcl=37189454&biw=1280&bih=917</u> (last updated March 24, 2011).

- [4] USA Today. March 19, 2011. "Testing finds no health threat along West Coast." See <u>http://usatoday30.usatoday.com/news/topstories/2011-03-18-733815698_x.htm.</u>
- [5] Zakaib, G.D. March 11, 2011. "Low-Dose Radiation Risks Unknown." Scientific American. See http://www.scientificamerican.com/article.cfm?id=radiation-risks-unknown.
- [6] Matsukawa, L. September 15, 2011. "Hanford expert weights in on Fukushima nuclear cleanup." KING TV, Seattle, Washington. See <u>http://www.king5.com/home/Hanford-expert-weighs-in-on-Fukushima-nuclearcleanup-129927308.html</u>.